Statement by Jim Williams
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before the

Committee on Science and Technology
Subcommittee on Energy Development and Applications
Honorable Richard Ottinger, Chairman
House of Representatives

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Mr. Chairman and Members of the Committee, it is a pleasure to appear before you today to discuss the alcohol fuels program of the Department of Agriculture.

Although my presentation today centers on alcohol fuels production from agricultural products, it needs to be set in the overall context of the USDA biomass energy program. This is necessary because much of our research effort is directed toward enhancing the growth of biomass crops--crops which are utilized directly in the production of alcohol fuels, but also can and are being used to produce other forms of energy. Therefore, our alcohol fuels program is not a specific entity, but rather an important component of the total biomass and synthetic fuels production effort within USDA.

Both the President and Congress have emphasized the use of ethanol in near-term national energy policy. We at USDA are fully committed to focusing the resources available to the Department for production and use of fuel-grade ethanol from agricultural materials, as a part of the President's program on alcohol fuels and consistent with our other responsibilities.

The President's recently-announced gasohol program for 1980-1990 establishes a goal of 500 million gallons of alcohol fuel capacity to be in place in 1981. About 80 million gallons of annual on-line capacity currently exists; 420 million gallons of additional capacity is therefore necessary to reach the President's goal.

Necessary Federal Incentives

The most important single action necessary at this time to achieve the alcohol fuels production goals is passage of the excise and income tax credits in the Oil Windfall Profits Tax Bill currently pending in Senate-House Conference. The President has recommended that the 4 cents per gallon Federal gasoline excise tax exemption for gasohol be made permanent, and the Administration also supports the 40 cents per gallon income tax credit for alcohol greater than 190 proof (30 cents per gallon for 150-190 proof alcohol) for ethanol produced and used for fuel on farms. These are powerful incentives for ethanol production--the equivalent of $16.80 per barrel of oil. The optional excise or income tax credits will provide balanced incentives which will provide roughly equal assistance for gasohol blends and for lower-proof alcohol produced on farms or by local cooperatives.

It is crucial that the excise and income tax credits be extended beyond the current October 1, 1984, expiration date for the gasoline excise tax exemption. If the tax credits were extended through 1999 as provided in the Senate version of the Windfall Profits Tax Bill, firms and investors considering investments in alcohol fuel plants could expect the return from the tax credits to be available essentially for the amortized life of a new plant.

Economics of Alcohol Production

If these and other Federal incentives are enacted in the pending Windfall Profits Tax Bill and Synfuels Bill, our calculations indicate that, on a pro forma basis, investment in new plant and equipment for fuel ethanol production can show an attractive financial return. Specifically, with $2.50 per bushel corn as feedstock material and other assumptions, a properly-managed, newly-constructed alcohol fuels plant of 40 million gallons annual capacity might be expected to yield a 20-25 percent return on investment. The basic calculations for this are contained in Attachment A to this statement.

The economics of fuel alcohol production can be strengthened by site-specific factors, particularly where the co-products of alcohol production can be increased in value or where production costs can be reduced.

For instance, the integration of an anhydrous alcohol distillery with a corn wet milling plant can result in increased production efficiencies and higher co-product returns (for corn oil, high-protein gluten feed, etc.). The co-location of a distillery with a cattle feedlot can allow the high-protein byproduct to be fed wet, thus saving large amounts of fuel otherwise required for drying the byproduct feed. Similarly, co-location with a cooperative grain elevator can save grain handling costs, co-location with an electrical power plant can use "waste" heat from the power plant, etc.

The remainder of my discussion today will address the specific elements of the USDA alcohol fuels program.

The USDA Alcohol Fuels Program

President Carter's goal for 1981 of 500 million gallons of ethanol is a major challenge--to increase capacity by more than six-fold in less than 2 years. This dramatic increase in ethanol production for gasohol for passenger and commercial vehicles and as direct fuel in farm power equipment will not be easy to achieve. But the USDA is committed to do its part to attain the President's program.

The Department has developed a six-point alcohol fuels program to assist in meeting the President's goal. These are:

- Financial Assistance for Commercial-Scale Plants
- Financial Assistance for Small and Community-Scale Plants
- Management of Domestic Commodity and Other Farm Programs to Include Alcohol Production
- Research and Development
- Technical Assistance for Small-Scale Producers
- Increased Export Sales of Alcohol Byproducts

A copy of the leaflet outlining the six-point program is attached for your information.

Financial Assistance for Commercial-Scale Plants

As a followup to the President's January 11 announcements on the stimulation of alcohol fuel production, the Department of Agriculture on January 19 designated $100 million of Rural Business and Industry loan guarantee authority of the Farmers Home Administration to assist in the construction and operation of alcohol fuel plants. With this authority, we will attempt to place loan

guarantees with firms and persons who can take advantage of the kinds of site-specific factors mentioned previously. We are conducting assessments of opportunities for integrated operation of alcohol plants with corn milling plants, animal feedlots, grain elevators, power plants, and other such opportunities. The B&I Loan Program is based upon FmHA's rural development mission and functions without a "no credit elsewhere" clause.

We estimate that the distillation plant construction assisted by these loan guarantees could provide about 25 percent of the new capacity needed to reach the goal of 500 million gallons of capacity during 1981.

Guaranteed loans for two pilot projects to produce fuel ethanol with advanced technologies had been tentatively approved under the Food and Agriculture Act of 1977. One of the projects has withdrawn, and USDA is replacing it with another to produce fuel.

Financial Assistance for Small and Community-Scale Alcohol Facilities

FmHA is making available a demonstration program of small-scale plants to help those planning to operate fuel alcohol plants at the farm or community level. Loan guarantee assistance for small-scale ethanol production in 1980 is available through the Business and Industry loan program and through an additional $10 million in insured and guaranteed loans from FmHA's Farm Operating and Ownership Loan Programs.

In providing loan assistance for small-scale ethanol production on a broader basis, we want to make sure that it is done in a way that will provide options

for use and marketing of the ethanol produced from small distilleries. Of particular concern is the extent to which it will prove technically and economically feasible to use non-anhydrous alcohol in farm tractors and other farm power equipment--especially since over 85 percent of power fuel use on farms is diesel.

Alcohol production could become a cooperative effort. This would provide farmers an option in that they may either provide grain or other feedstock to a community plant and withdraw needed anhydrous alcohol and distillers grain byproduct for use on their farm, with the remainder being sold for profit; or they could submit farm produced lower-proof alcohol to the community plant for upgrading into anhydrous alcohol for sale or for use on the farm. The amount of product they would receive would, of course, be based on the amount of grains or feedstock they supplied to the community plant.

If this kind of profit-sharing (or fuel-sharing) arrangement is to operate to the maximum benefit of the farmers involved, the community ethanol processing and upgrading plant should be organized on a genuine cooperative basis, whereby the affiliated farmers participate in management decisions, qualify for patronage dividends or other forms of profit-sharing, and otherwise directly share in the cooperative's management and returns. For this reason, we would expect to target loan and loan guarantee assistance primarily to individual farmers and to cooperatively-organized enterprises.

The Department of Agriculture is now in the process of working out a program of financial and technical assistance to small-scale alcohol producers. Because

ethanol may prove to be primarily marketable for blending with gasoline in automobiles, there ought to be facilities in place for the upgrading of lower-proof alcohol to anhydrous alcohol, prior to the widespread construction of on-farm stills with only lower-proof production capability.

For this reason, we may target much of our initial lending assistance on "community" sized plants which have excessive anhydrous production capacity and therefore can upgrade farmer produced lower-proof alcohol, as well as produce anhydrous alcohol directly from unprocessed feedstocks.

Research and Development

The USDA is expanding its research and development efforts in support of the increased emphasis being placed on the production of alcohol fuels from agricultural feedstocks. One of the more important areas for research is the reconstitution of livestock rations to accommodate the increased production of high-protein feed supplement which results from ethanol production from corn. Economic research on agricultural land and water availability and use patterns is also crucial. The Science and Education Administration and the Economics, Statistics, and Cooperatives Service of USDA are placing special emphasis on these and other research and development problems associated with a large-scale U.S. alcohol fuels production effort.

A large component of the USDA research effort involves the more efficient conversion of fuel alcohol from starch and sugar commodities, and from cellulosic feedstocks. The research and testing to increase yields from feedstocks and reduce costs associated with cellulosic materials is particularly

necessary, in order to augment supplies of feedstocks in addition to grain and other commodities during the 1980's. The work on agricultural feedstocks and conversion technology is being conducted primarily at USDA's Agricultural Energy Research Center in Peoria, Illinois, and is carried out in cooperation with work by DOE and the private sector.

The USDA's Agricultural Energy Research Center in Tifton, Georgia, is examining more efficient production, harvesting and conversion of wood and crop biomass for alcohol and other energy forms. They are focusing some effort on systems that can be used on farms and in small communities.

The USDA is also carrying out a research grants program on alcohol fuels and agricultural energy at cooperating institutions. Of $2.4 million funding this year, $1 million will go to alcohol fuel research. Thirty proposals are now being reviewed. Last year six projects were awarded grants totalling $500,000 to improve alcohol conversion technology. The total USDA increase in funding of biomass energy research and development for FY 1980 is about $5.5 million.

In addition to the research efforts of the USDA, the land-grant institutions have on-going projects which are coordinated with and complement the USDA activities. A summary of these, along with a breakout of the increased USDA energy funding on biomass for FY 1980, have already been provided to the Committee.

Management of Domestic Commodity and other Farm Programs to Include Alcohol Production

This alcohol fuels program represents a basic policy change. The USDA now is including production of farm commodities for alcohol feedstocks as a major objective of agricultural policy--alongside the production of food, feed, and fiber. Grain reserve targets, commodity price supports, acreage diversion and other related agricultural policies are being managed to include the grain requirements for alcohol production equally with other consumers of grain.

Since almost 60 percent of the estimated cost of producing ethanol (with corn at $2.50 per bushel) is attributable to the feedstock input, continued growth of the alcohol fuels industry could be largely dependent on future feedstock availability--at a reasonable price.

The production of alcohol fuels will not take precedence over the traditional objectives of agricultural policy--production of food, feed, and fiber--but it will take its place beside them in the administration of farm programs.

Technical Assistance for Small-Scale Alcohol Producers

The USDA is also expanding its technical assistance activities in on-farm and small-scale fuel alcohol production, as a part of the President's program. We have placed special emphasis upon technical assistance to this date, because of the problems of design, marketing, safety, and others that must be handled for successful operation of distilleries at the farm and community level.

Specially trained Cooperative Extension specialists will work with producers on plant design, construction, production, safety, and government regulations to help install and keep small-scale facilities operating.

The Cooperative Extension Service in the various States has prepared instructional materials, conducted seminars, and is preparing to provide more individualized assistance to those interested in local production. Supplementing these materials is a comprehensive technical manual on small-scale fuel alcohol systems prepared for USDA by Development Planning Research Associates (DPRA, Inc.) of Manhattan, Kansas. This will provide more specific details for our technical assistance efforts. This document will be available shortly for public distribution and for use by Federal, State and county staff of the Cooperative Extension Service, Farmers Home Administration, the Agricultural Stabilization and Conservation Service and others.

Increased Export Sales of Alcohol Byproducts

As the production of alcohol fuels is stepped-up, distillers dried grains and solubles will become increasingly available. To avoid if possible an oversupply of DDGS and the possible depression of prices of other protein supplements such as soybean oil meal and cottonseed meal, USDA's market development staff is already looking into the foreign market potential for DDGS and is working with cooperator groups to expand exports.

This USDA alcohol fuels program is being done in collaboration with other Federal agencies including the Department of Energy, Treasury Department--Bureau of Alcohol, Tobacco and Firearms, Community Services Administration and the Small Business Administration.

The USDA and the Department of Energy have been developing a program Memorandum of Understanding which would transfer a portion of DOE's Biomass energy program to the USDA for management and operation. Some $12.8 million of passthrough funding for FY 1980 would be involved. We will be pleased to keep the Subcommittee informed of progress on this matter.

The Committee inquired about efforts by USDA to integrate alcohol fuels into the total farm systems. Our emphasis on small and community-scale facilities is designed so that the individual farmer, either on his own farm or in a community facility, may use his own labor and feedstock to produce alcohol fuels, and then to use the alcohol fuels on his farm as well as the byproduct high-protein feed. This should provide the farmers with a much higher degree of energy and feed self-sufficiency than is currently the case.

We are also examining the potential impact of fuel ethanol production on cropping patterns, farm size and structure, and other aspects related to the structure of U.S. agriculture. This is being done within the context of Secretary Bergland's overall focus on the structure of American agriculture and the impact of alternative policies and programs on structure.

This ends my prepared statement. I will try to answer any questions that you might have.

ATTACHMENT A

Estimated End-of-1979 Economics of a 40 Million Gallon Per Year Grain Alcohol Distillery

(With Federal Subsidies Only)

	Dec. 1979
Feedstock costs ($2.50/Bu. corn)	$ .98
Direct costs (fuel, labor, etc.)	.26
Indirect costs (administrative, marketing, plant overhead)	.10
Capital recovery (includes 15% ROE)*	.34
TOTAL	$1.68
Less distillers' dried grain byproduct credit ($116/ton)	-.38
	$1.30
Less Federal Gasoline Tax credit	-.40
Less Other Federal incentives (investment tax credit; entitlement credit)	-.08
NET PRODUCTION COST PER GALLON OF ETHANOL	$ .82

	Gasoline	Ethanol
Refinery gate price on non-lead gasoline	$ .85	--
Octane credit	.10	--
TOTAL	$ .95	$ .82

ESTIMATED PROFIT PER GALLON ETHANOL, IN ADDITION TO 15% ROE** $ .13

*The capital recovery estimate assumes a 15 percent after tax return on equity, 70 percent equity financing, and 12 percent cost of credit. The 13 cents estimated profit per gallon, factored into capital recovery, would yield about a 20-25 percent after-tax return on equity. Additional state subsidies would increase the rate of return.

** Return on Equity

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